WATER & SEWAGE WORKS

Index, Vol. 120, January-December, 1973*

Activated Sludge
An experiment ..... May 94
Big centrifugal compressors ..... Nov 62
Biological treatment in Kenosha ..... Aug 48
Design of air compressor installations ..... May 106
Effects of alum addition ..... Jan 63
High rate absorption-bio-oxidation ..... June 68
Multistage tower-type process ..... Sept 122
Rum distillery wastes treatment ..... Sept 107
Upgrading with addition of powdered carbon ..... Sept 90
Wastewater treatment with activated carbon ..... Nov 42

Advanced Waste Treatment
AWT vs land treatment ..... Apr 58
Bath water for astronauts ..... Mar 61
Biological-chemical system ..... Feb 66
Microstraining ..... Aug 42
Multistage tower-type process ..... Sept 122
Physical/chemical plant ..... Sept 86
Renovation of domestic wastewater ..... Apr 78

Algae
Nitrogen and phosphorus uptake by C pyrenoidosa ..... Mar 76

Author Instructions
Author Instructions ..... Feb 63

Authors
Adams, A. C. ..... June 72
Adler, Dennis ..... Mar 56
Agnew, R. W., et. al. ..... Aug 48
Allen, W. M. ..... Sept 114
Anderson, Douglas T., et.al. ..... Jan 63
Ardill, J. ..... Dec 38
Austin, J. H., et. al. ..... Dec 30

Bacon, Ernest C. ..... Jan 68
Bailey, Harry H. ..... May 106
Bakken, J. D., et. al. ..... July 65
Barlis, G. ..... July 62, Aug 62
Basket, Russell C. ..... Jan 47
Beall, Sr., Don M. ..... Jan 59
Bela, M. K., et. al. ..... Dec 30
Besik, F. ..... Apr 78, June 68, Sept 122
Bhagat, S. K., et. al. ..... Feb 54
Boyle, Jerry D., et. al. ..... Jan 70
Brehm, S. H. ..... Apr 55
Brown, Jr., J. A., et. al. ..... May 105
Budd, W. E. ..... Aug 52
Bungay, III, H. R. ..... Feb 78
Burant, W., et. al. ..... Nov 42
Burnett, W. E. ..... Sept 107

Cameron, M. S. ..... Sept 116
Caplan, F. ..... July 53, Sept 95, Oct 72
Carcich, Italo G., et. al. ..... Feb 59
Carter, Jr., James L. ..... Jan 44
Chung, S. K., et. al. ..... Feb 54
Clark, Douglas W. ..... Nov 46, Dec 33
Clesceri, Nicholas L., et. al. ..... Mar 82
Cook, Donald F. ..... May 90
Coote, T. A. ..... Oct 56
Courey, F. ..... July 60
Cowan, Peter A., et. al. ..... Nov 50, Dec 36
Craddock, W. ..... June 74
Craft, T. F. et. al. ..... Jan 78
Cruver, J. E. ..... Oct 74
Culp, Gordon L. ..... Apr 58

Davis, E. M., et. al. ..... Oct 79
Diaper, E. W. ..... Aug 42
DiGiano, F. A., et. al. ..... Sept 90
Durham, D., et. al. ..... Oct 67
Dye, E. O. ..... May 94

Evans, Ralph L., et. al. ..... Feb 74
Faust, S. L., et. al. ..... Jan 48
Fitzgerald, G. P., et. al. ..... Jan 48
Forsberg, C. R., et. al. ..... Apr 71
Froman, C. A. ..... Nov 54

Galloway, D. B. ..... Nov 48
Goswami, S. R. ..... Oct 52
Gupta, M. K., et. al. ..... Aug 48

Halmos, E. E. ..... Jan 43, June 66, July 69
Hammer, Mark J. et. al. ..... Jan 63
Hansen, C. A., et. al. ..... Aug 48
Hayes, Allison ..... Apr 55
Hendricks, R L., et. al. ..... Nov 53
Hetling, Leo J., et. al. ..... Feb 59
Hobbs, M. F., et. al. ..... Aug 67
Holm, John D. ..... Apr 68
Hoover, M. G. ..... Aug 58
Hopkins, E. S., et. al. ..... Aug 72
Huang, P M., et. al. ..... June 82
Huie, E. L., et. al. ..... Feb 64
Hulka, S. C., et. al. ..... Oct 79
Hwang, C. P., et. al. ..... Apr 71, June 82
Hyde, J A. ..... Aug 56

Ingols, R. S., et. al. ..... Jan 78, Feb 64

Kalinske, A. A., et. al. ..... July 54
Kawata, K, et. al. ..... June 57
Kayser, Jerome ..... Apr 56
Keen, S. R., et. al. ..... Oct 79
Ketterson, W. ..... Aug 41
Kothandaraman, V. ..... July 43
Kruse, C. W., et. al. ..... June 57
Kumar, Inder Jit, et. al. ..... Mar 82

Lamb, G. L., et. al. ..... Feb 66
Langworthy, V. W. ..... Jan 41, Feb 41, Mar 51, Apr 51
May 55, May 82, June 51, June 65, July 28, July 52
Aug 33, Sept 75, Oct 51, Nov 41, Dec 20
Lash, L. D., et. al. ..... July 54
Lee, C. A. ..... May 110
Lin, Shundar, et. al. ..... Feb 74
Lines, J. M., et. al. ..... May 105
Longley, K. E., et. al. ..... June 57
Lukco, B J., et. al. ..... Dec 30

Maddex, E. G., et. al. ..... Aug 72
Manahan, S. E., et. al. ..... Sept 102
Marshke, Donald M. ,et. al. ..... Jan 70
Martin, D. M., et. al. ..... Mar 66
McKinney, R. E., et. al. ..... Mar 66
Mediar, S J. ..... Nov 56
Michel, James L., et. al. ..... Mar 76
Michel, Thomas M., et. al. ..... Mar 76
Middlebrooks, E. J., et. al. ..... Nov 50

Nadler, C. R., et. al. ..... Jan 48

O'Boyle, .T P. ..... June 73
O'Brien, W. J., et. al. ..... Mar 66
O'Neill, J. M. ..... Nov 66
Olivieri, V. P., et. al. ..... June 57
Ordon, Chester J. ..... Feb 70
Parrott, Jim ..... Apr 54
Paul, J., et. al. ..... May 105
Pfefferkorn, O., et. al. ..... Sept 128
Porcella, Donald B., et. al. ..... Nov 50
Powell, G. Morgan, et. al. ..... Apr 58
Price, Charles ..... Apr 56

Reed . A., et. al. ..... May 73
Ri . C., et. al. ..... May 105
Ripley, G, et al. ..... Feb 66

Sanks, R. L. ..... June 86
Sanson, S. F., et. al. ..... Nov 53
Scaramelli, A. B., et. al. ..... Sept 90

*Note: Reports of conventions are listed under "Conference Reports", "AWWA" and "WPCF"

WATER & SEWAGE WORKS

Index, Vol. 120, January-December, 1973*

Activated Sludge
An experiment ..... May 94
Big centrifugal compressors ..... Nov 62
Biological treatment in Kenosha ..... Aug 48
Design of air compressor installations ..... May 106
Effects of alum addition ..... Jan 63
High rate absorption-bio-oxidation ..... June 68
Multistage tower-type process ..... Sept 122
Rum distillery wastes treatment ..... Sept 107
Upgrading with addition of powdered carbon ..... Sept 90
Wastewater treatment with activated carbon ..... Nov 42

Advanced Waste Treatment
AWT vs land treatment ..... Apr 58
Bath water for astronauts ..... Mar 61
Biological-chemical system ..... Feb 66
Microstraining ..... Aug 42
Multistage tower-type process ..... Sept 122
Physical/chemical plant ..... Sept 86
Renovation of domestic wastewater ..... Apr 78

Algae
Nitrogen and phosphorus uptake by C pyrenoidosa ..... Mar 76

Author Instructions
Author Instructions ..... Feb 63

Authors
Adams, A. C. ..... June 72
Adler, Dennis ..... Mar 56
Agnew, R. W., et. al. ..... Aug 48
Allen, W. M. ..... Sept 114
Anderson, Douglas T., et.al. ..... Jan 63
Ardill, J. ..... Dec 38
Austin, J. H., et. al. ..... Dec 30

Bacon, Ernest C. ..... Jan 68
Bailey, Harry H. ..... May 106
Bakken, J. D., et. al. ..... July 65
Barlis, G. ..... July 62, Aug 62
Basket, Russell C. ..... Jan 47
Beall, Sr., Don M. ..... Jan 59
Bela, M. K., et. al. ..... Dec 30
Besik, F. ..... Apr 78, June 68, Sept 122
Bhagat, S. K., et. al. ..... Feb 54
Boyle, Jerry D., et. al. ..... Jan 70
Brehm, S. H. ..... Apr 55
Brown, Jr., J. A., et. al. ..... May 105
Budd, W. E. ..... Aug 52
Bungay, III, H. R. ..... Feb 78
Burant, W., et. al. ..... Nov 42
Burnett, W. E. ..... Sept 107

Cameron, M. S. ..... Sept 116
Caplan, F. ..... July 53, Sept 95, Oct 72
Carcich, Italo G., et. al. ..... Feb 59
Carter, Jr., James L. ..... Jan 44
Chung, S. K., et. al. ..... Feb 54
Clark, Douglas W. ..... Nov 46, Dec 33
Clesceri, Nicholas L., et. al. ..... Mar 82
Cook, Donald F. ..... May 90
Coote, T. A. ..... Oct 56
Courey, F. ..... July 60
Cowan, Peter A., et. al. ..... Nov 50, Dec 36
Craddock, W. ..... June 74
Craft, T. F. et. al. ..... Jan 78
Cruver, J. E. ..... Oct 74
Culp, Gordon L. ..... Apr 58

Davis, E. M., et. al. ..... Oct 79
Diaper, E. W. ..... Aug 42
DiGiano, F. A., et. al. ..... Sept 90
Durham, D., et. al. ..... Oct 67
Dye, E. O. ..... May 94

Evans, Ralph L., et. al. ..... Feb 74
Faust, S. L., et. al. ..... Jan 48
Fitzgerald, G. P., et. al. ..... Jan 48
Forsberg, C. R., et. al. ..... Apr 71
Froman, C. A. ..... Nov 54

Galloway, D. B. ..... Nov 48
Goswami, S. R. ..... Oct 52
Gupta, M. K., et. al. ..... Aug 48

Halmos, E. E. ..... Jan 43, June 66, July 69
Hammer, Mark J. et. al. ..... Jan 63
Hansen, C. A., et. al. ..... Aug 48
Hayes, Allison ..... Apr 55
Hendricks, R L., et. al. ..... Nov 53
Hetling, Leo J., et. al. ..... Feb 59
Hobbs, M. F., et. al. ..... Aug 67
Holm, John D. ..... Apr 68
Hoover, M. G. ..... Aug 58
Hopkins, E. S., et. al. ..... Aug 72
Huang, P M., et. al. ..... June 82
Huie, E. L., et. al. ..... Feb 64
Hulka, S. C., et. al. ..... Oct 79
Hwang, C. P., et. al. ..... Apr 71, June 82
Hyde, J A. ..... Aug 56

Ingols, R. S., et. al. ..... Jan 78, Feb 64

Kalinske, A. A., et. al. ..... July 54
Kawata, K, et. al. ..... June 57
Kayser, Jerome ..... Apr 56
Keen, S. R., et. al. ..... Oct 79
Ketterson, W. ..... Aug 41
Kothandaraman, V. ..... July 43
Kruse, C. W., et. al. ..... June 57
Kumar, Inder Jit, et. al. ..... Mar 82

Lamb, G. L., et. al. ..... Feb 66
Langworthy, V. W. ..... Jan 41, Feb 41, Mar 51, Apr 51
May 55, May 82, June 51, June 65, July 28, July 52
Aug 33, Sept 75, Oct 51, Nov 41, Dec 20
Lash, L. D., et. al. ..... July 54
Lee, C. A. ..... May 110
Lin, Shundar, et. al. ..... Feb 74
Lines, J. M., et. al. ..... May 105
Longley, K. E., et. al. ..... June 57
Lukco, B J., et. al. ..... Dec 30

Maddex, E. G., et. al. ..... Aug 72
Manahan, S. E., et. al. ..... Sept 102
Marshke, Donald M. ,et. al. ..... Jan 70
Martin, D. M., et. al. ..... Mar 66
McKinney, R. E., et. al. ..... Mar 66
Mediar, S J. ..... Nov 56
Michel, James L., et. al. ..... Mar 76
Michel, Thomas M., et. al. ..... Mar 76
Middlebrooks, E. J., et. al. ..... Nov 50

Nadler, C. R., et. al. ..... Jan 48

O'Boyle, .T P. ..... June 73
O'Brien, W. J., et. al. ..... Mar 66
O'Neill, J. M. ..... Nov 66
Olivieri, V. P., et. al. ..... June 57
Ordon, Chester J. ..... Feb 70
Parrott, Jim ..... Apr 54
Paul, J., et. al. ..... May 105
Pfefferkorn, O., et. al. ..... Sept 128
Porcella, Donald B., et. al. ..... Nov 50
Powell, G. Morgan, et. al. ..... Apr 58
Price, Charles ..... Apr 56

Reed . A., et. al. ..... May 73
Ri . C., et. al. ..... May 105
Ripley, G, et al. ..... Feb 66

Sanks, R. L. ..... June 86
Sanson, S. F., et. al. ..... Nov 53
Scaramelli, A. B., et. al. ..... Sept 90

*Note: Reports of conventions are listed under "Conference Reports", "AWWA" and "WPCF"

Shaheen, E I. ..... May 84
Shell, G. L., et. al. ..... July 54
Shepherd, J. A., et. al. ..... Aug 67
Sikora, T. E., et. al. ..... Sept 128
Smith, M. J., et. al. ..... Sept 102
Stevenson, A. H., ... June 88
Stout, M. C., et. al. ..... July 65
Sullivan, William T., et. al. ..... Feb 74

Tolnay, Jim ..... May 81
Turvey, M. D., et. al. ..... Mar 66

Van Faasen, Jerold ..... Mar 62
Vaughn, J. D., et. al. ..... May 73
Vollstedt, T. J., et. al. ..... Nov 42
Vondrick, A. ..... Apr 52

Wall, Charles, Jr., ... Sept 96, Mar 58
Warren, A. W., et. al. ..... Dec 35
Weber, W. H., et. al. ..... Sept 128
Wolf, H. W., et. al. ..... Oct 67
Wolff, J. ..... June 84

Yedidiah, Sh. ..... May 80
Yrjanainen, G., et. al. ..... Dec 35

Zahid, Zeke ..... Feb 47

AWWA
AWWA Wins National Safety Council Award ..... Oct 88
Las Vegas annual conference ..... July 74
Las Vegas Hosts 93rd AWWA conference ..... May 56
Michigan Section ..... Jan 55, Nov 68
Ontario Section ..... July 75

Books
Books, Manuals, reports ..... Jan 28, Feb 24, Mar 44, Apr 44
May 26, May 80, June 28, July 22, July 52
Aug 29, Sept 60, Oct 44, Oct 88, Nov 32

Certification
Distribution system operators ..... May 82

Chemical
Activated carbon fitration ..... Nov 56
Control of sewage hydrogen sulfide with hydrogen peroxide ..Aug 67
Economical foam control ..... Aug 56
Liquid polymers ..... Oct 64
New automated system handles bulk chemicals ..... July 48
Toxic metals in sludges ..... July 50
Upgrading with addition of powdered carbon ..... Sept. 90
Wastewater treatment with activated carbon ..... Nov 42

Coagulation
Effects of alum addition ..... Jan 63
Fe(II) and Fe(III) compounds ..... Feb 54

Collection
Low pressure sewer system

Computer
Automatic network analysis by microcomputer ..... Mar 65
New computer system monitors sewers ..... Apr 57
Two computer programs aid stream quality ..... Jan 77

Conference Reports
AIChE annual meeting ..... Sept 112
ASCE Water Resources meeting ..... Apr 75
AWWA annual conference ..... July 74
AWWA, Michigan Section ..... Jan 55, Nov 68
AWWA, Ontario Section ..... July 75
Las Vegas hosts 93rd AWWA conference ..... May 56
Industrial Water and Pollution conference and Exposition ..... Mar 52
National Association of Water Companies ..... Jan 82
NEWWA convention ..... Feb 51
WPCA, Indiana section ..... Feb 51
WPCA, Michigan section ..... Aug 24
WPCF Annual conference ..... Sept 81, Nov 35
WPCF 8th annual ad award selections ..... Oct 59
WPCF Workshops ..... Apr 70
WWEMA Industrial water and pollution conference ..... June 72

Construction
Boca Raton's new wastewater treatment plant ..... June 65
Federal assistance speeds recovery after flood ..... Mar 62
Gearing for the future ..... Nov 65
Chesapeake's gravity sewer line upgraded ..... Sept 114
Interceptor installation for Yuba City, Calif. ..... Jan 80
Ocean Outfalls help preserve Virgin Islands ..... June 52
Polyethylene pipeline conquers swamp ..... Mar 74
Polyethylene pipe solves problem ..... Aug 54
Plant modernized by two trolley hoists ..... Feb 46
Pontiac, Mich. installed unique combination sewer ..... June 85
Post-election view from nation's capitol ..... Jan 42
Sandalfoot Cove, Fla. expands major plant ..... Sept 119
Turnkey problem ..... May 104

Consulting Engineers
Role in industrial wastewater treatment

Desalting
Calcium Sulfate seed slurry process ..... Sept 128
Reverse osmosis ..... Oct 74

Design
Aluminum pit doors ..... Oct 62
Automatic network analysis by microcomputer ..... Mar 65
AWT vs land treatment ..... Apr 58
Cast iron pipe for modern sewage systems ..... Aug 58
Chesapeake's gravity sewer lien upgraded ..... Sept 114
Chlorine contact chamber ..... Jan 70
Cost optimization ..... Feb 70
Design of air compressor installations ..... May 106
Enlargement of small town water system ..... Aug 72
Floating water treatment ..... May 90
Flow through time ..... Jan 78
Gary-Hobart service center ..... Nov 54
Miniature treatment plant ..... May 102
New automated system handles bulk chemicals ..... July 48
Ocean outfalls help preserve Virgin Islands ..... June 52
Paperwork problem solved ..... Apr 76
Performance characteristics of chlorine tanks ..... July 43
Plant modernized by two trolley hoists ..... Feb 46
Pontiac, Mich. installs unique combination sewer ..... June 85
Polyethylene pipeline conquers swamp ..... Mar 74
Pressure sewer design procedure ..... Nov 53
Rigid test standards for pumps ..... Nov 60
Role in industrial wastewater treatment ..... Aug 52
Simple method of retention basin ..... Dec 35
Surge control ..... Feb 47
Turnkey problem ..... May 104
Ultrasonics in sewage industry ..... June 84
Variable speed pumping systems ..... July 62

Disinfection
Chlorine contact chamber ..... Jan 70
Improvement in terminal disinfection ..... June 57
Treated wastewater chlorination ..... Apr 68
Wastewater bacteria ..... Oct 79
Wastewater chlorination ..... Oct 67

Editorials
National Water Supply Management ..... Jan 41
A productive gathering ..... Feb 41
A case for increased cooperation ..... Mar 51
Alternatives for water resource protection ..... Apr 51
Distribution system operator training ..... May 58
Distribution system operator workshop ..... June 51
Water resource protection ..... July 28
Technology Transfer ..... Aug 33
Manpower development ..... Sept 75
Wastewater Chlorination ..... Oct 51
Too many conferences ..... Nov 41
Current crisis ..... Dec 20

Eutrophication
Nitrogen and phosphorus uptake by C pyrenoidosa ..... Mar 76
Two computer programs aid stream quality ..... Jan 77
Two methods for algae removal ..... Mar 66

Filtration
Activated carbon filtration ..... Nov 56
Biological-chemical system ..... Feb 66

Incineration
New method solves grease problem ..... Sept 116

Industrial Wastes
EPA proposes effluent standards for five industries ..... Oct 84
"Overland-flow" irrigation system solves Campbell Soup's Texas disposal problem ..... Apr 84
Role in industrial wastewater treatment of the consulting firm ..... Aug 52
Rum distillery wastes: Laboratory studies on aerobic treatment ..... Sept 107
Steel mill waste line protected with epoxies ..... July 46

Instrumentation

Increased capacity and standby power at Orlando ..... Oct 60
Meter reading and costs studied ..... Jan 68
Ultrasonics in sewage industry ..... June 84

Joint Treatment
Industrial and domestic wastes at Avon, N.Y. ..... Feb 52

Laboratory
Administrator and laboratory ..... Nov 46, Dec 33
BOD: Determining necessary dilution technique ..... May 105
Mercury ..... Feb 74
Orthophosphate determinations ..... Jan 47
Polarographic method ..... Apr 71

Legal
Background on guidelines for new water pollution control standards ..... June 73
EPA proposes effluent standards for five industries ..... Oct 84
EPA says "pollution havens" won't last ..... July 69
Water Pollution Control Act Amendments of 1972 ..... Jan 60
Zero discharge goal may be modified ..... Oct 71

Maintenance
Calcium sulfate seed slurry process ..... Sept 128
Conversions reduce maintenance woes ..... Sept 100
Gary-Hobart service center ..... Nov 54
Mechanical packing facilitates quick flood recovery ..... Nov 64

Meters
Valparaiso, Ind. updates its program ..... Oct 56
Meter reading and costs studied ..... Jan 68

Monitoring
New computer system monitors sewers ..... Apr 57

Nomographs
Equivalent lengths of divided circuits ..... Oct 72
Resistance equivalents of valves and fittings ..... July 53
Saph and Schoder formula ..... Sept 95

Operators Notebook
Two inventions solve operator problems ..... Jan 59

Outfall
Helps preserve the Virgin Islands ..... June 52

Personnel
Distribution system operators ..... May 82
Performance-oriented wastewater technology program ..... Dec 30
Public service careers program ..... May 58
Short history of water utilities training dept. of Texas A&M University ..... Sept 99
Socio-political implications of engineering today ..... June 88
Status of engineering in environmental programs ..... Feb 78
Texas high schools offer environmental health science course ..... Sept 96
Texas public schools train future operators ..... Nov 66

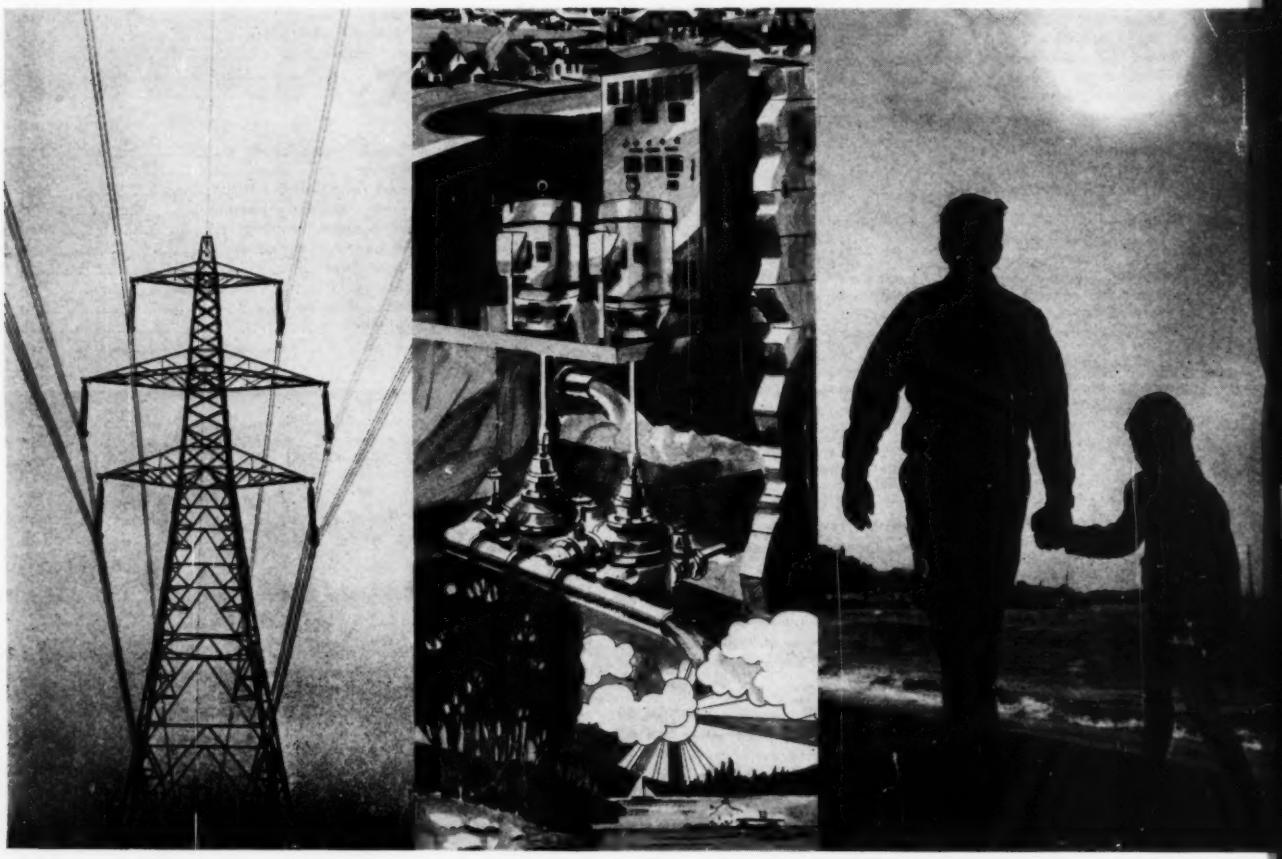
Phosphorus
In wastewater ..... Feb 59

Phosphorus Removal
From wastewaters: cost analysis ..... Mar 82

Pipe
Cast iron pipe for modern sewage systems ..... Aug 58
Chesapeake's gravity sewer line upgraded ..... Sept 114
J-M moves to Denver ..... Aug 61
Ocean outfalls help preserve Virgin Islands ..... June 52
Polyethylene pipeline conquers swamp ..... Mar 74
Polyethylene pipe solves problem ..... Aug 54
Steel mill waste line protected with epoxies ..... July 46
Surge control ..... Feb 47

Pollution
Effects of wastewater prosphorus on receiving waters ..... Jan 48

Pollution Control
Biological treatment in Kenosha ..... Aug 48
Department of Defense ..... Feb 42
EPA says "pollution havens" won't last ..... July 69
Industrial and domestic wastes at Avon, N.Y. ..... Feb 52
Low cost solution for river pollution ..... May 89
Physical/chemical treatment in Racine ..... Aug 48
Progress in Virginia ..... June 66
Regional cooperation solves problem ..... Jan 83
Riley helps save the Wabash and Erie Canal ..... Mar 80



Self-contained sanitation at Kincheloe AFB ..... Mar 56
Two computer programs aid stream quality ..... Jan 77
Water Pollution Control Act Amendments of 1972 ..... Jan 60
Water quality progress ..... Apr 52
Zero discharge goal may be modified ..... Oct 71

Product Directory
Product Directory and Purchasing Guide ..... May 123, Sept 151

Pumps
Conversions reduce maintenance woes ..... Sept 100
Low pressure sewer system ..... Nov 58
Mechanical packing facilitates quick flood recovery ..... Nov 64
Rigid test standards for pumps ..... Nov 60
Riverside's ground water pumping system ..... May 100
Variable speed pumping systems ..... July 62, Aug 62

Research
Experiment with waste activated sludge ..... May 94
Biological response to detergent and nondetergent phosphorus in sewage ..... Nov 50, Dec 36
Chelating agents in natural waters and wastewaters ..... Sept 102
Cobalt interference ..... July 54
High rate adsorption-bio-oxidation ..... June 68
Inorganic and organic phosphorus distribution ..... June 82
Mercury ..... Feb 74
Multistage tower-type process ..... Sept 122
Performance characteristics of chlorine tanks ..... July 43
Renovation of domestic wastewater ..... Apr 78
Restoring a dead trickling fliter ..... Feb 64
Team goes to ocean floor ..... Sept 106
Treated wastewater chlorination ..... Apr 68
Toxic metals in sludges ..... July 50
Two computer programs aid stream quality ..... Jan 77
Wastewater bacteria ..... Oct 79

Reuse
Bath water for astronauts ..... Mar 61
Calcium sulfate seed slurry process ..... Sept 128

Sewage
Inorganic and organic phosphorus distribution ..... June 82

Sewage Treatment
AWT vs land treatment ..... Apr 58
Biological-chemical system ..... Feb 66
Biological response to detergent and nondetergent phosphorus ..... Nov 50, Dec 36
Boca Raton's new wastewater treatment plant ..... June 65
Biological treatment in Kenosha ..... Aug 48
Cobalt interference ..... July 54
Chlorine contact chamber ..... Jan 70
Cost analysis of phosphorus removal ..... Mar 82
Design of air compressor installations ..... May 106
Economical foam control ..... Aug 56
Effects of alum addition ..... Jan 63
Emergency equipment ..... Sept 120
Experiment with waste activated sludge ..... May 94
Fe(II) and Fe(III) ..... Feb 54
Federal assistance speeds recovery after flood ..... Mar 62
Flow through time ..... Jan 78
High rate adsorption-bio-oxidation ..... June 68
Improvement in terminal disinfection ..... June 57
Industrial and domestic wastes at Avon, N.Y. ..... Feb 52
Liquid polymers ..... Oct 64
Microstraining ..... Aug 42
Miniature treatment plant ..... May 102
Multistake tower-type process ..... Sept 122
New Westinghouse plant ..... June 54
Nitrogen and prosphorus uptake by C pyrenoidosa ..... Mar 76
Performance charcteristics of chlorine tanks ..... July 43
Physical/chemical plant ..... Sept 86
Physical/chemical treatment in Racine ..... Aug 48
Renovation of domestic wastewater ..... Apr 78
Restoring a dead trickling filter ..... Feb 64
Riley helps save Wabash and Erie Canal ..... Mar 80
Self-contained sanitation at Kincheloe AFB ..... Mar 56
Treated wastewater chlorination ..... Apr 68
Two methods for algae removal ..... Mar 86
Wastewater chlorination ..... Oct 67
Wastewater treatment with activated carbon ..... Nov 42
Water testing improves ecology ..... Aug 41

Sewage Works
Big centrifugal compressors ..... Nov 62
Conversions reduce maintenance woes ..... Sept 100
GE Environmental Systems Div. ..... Sept 127

In the energy-ecology conflict, Lancer® pump drives help both sides.

Clean waterways demand power. Power to handle, move and control wastewater during the cleaning process. Yet energy is in short supply. And it's costly.

That's why the efficiency of the Lancer pump drive is so important. It gets the job done while conserving power. Wasted power costs more than money—it unnecessarily strains our power resources and further pollutes our environment. But it does cost money.

Further, the Lancer 44XLP drive is the first solid-state ac converter as rugged and reliable as its standard ac motor. The kind of reliability you can install, start-up and virtually forget. On centrifugal pump applications in lift stations and treatment plants, that's critical.

So help yourself, your community, your company and your customers with one simple step. If you're considering a variable voltage, eddy current, wound rotor or other variable speed drive for your project, consider the Lancer 44XLP by Louis Allis instead. Its total cost is your lowest cost.

For further information or assistance with your specific application, contact your nearby Louis Allis sales engineer or write the Louis Allis Drives & Systems Division, Dept. P, 427 East Stewart Street, Milwaukee, Wisconsin 53201. Ask for Bulletin 4430.

Engineered reliability where it counts.

Litton LOUIS ALLIS Drives & Systems Division

For information circle service card No. 22

Increased capacity and standby power at Orlando ..... Oct 60
Sandalfoot Cove, Fla. expands major plant ..... Sept 119
Mechanical packing facilitates quick flood recovery ..... Nov 64
Rigid test standards for pumps ..... Nov 60
Ultrasonics in sewage industry ..... June 84
Variable speed pumping systems ..... July 62, Aug 62

Sewers
Cast iron pipe for modern sewage systems ..... Aug 58
Control of sewage hydrogen sulfide with hydrogen peroxide ..Aug 67
Interceptor installation for Yuba City, Calif. ..... Jan 80
Low pressure sewer system ..... Nov 58
Mercury ..... Feb 74
New computer system monitors sewers ..... Apr 57
Polyethylene pipe solves problem ..... Aug 54
Pontiac, Mich. unique combination sewer installed ..... June 85
Pressure sewer design procedure ..... Nov 53
Riley helps save Wabash and Erie canal ..... Mar 80
Ripon solves its sewer problem ..... May 110

Sludge
Disposal and lime reclamation system ..... Sept 88
Team goes to ocean floor ..... Sept 106
Toxic metals in sludges ..... July 50

Tanks
Tank of the year award ..... Dec 32

Training
Distribution system operators ..... May 82
Making 2x2 slides ..... June 86
Performance-oriented wastewater technology program ..... Dec 30
Public service careers program ..... Mar 58
Short history of Water Utilities Training Dept. of Texas A&M University ..... Sept 99
Socio-political implications of engineering ..... June 88
Texas high schools offer environmental health science course ..... Sept 96
Texas public schools train future operators ..... Nov 66

Trickling Filters
Flow through time ..... Jan 78

Water Supply
Chelating agents in natural waters and wastewaters ..... Sept 102
Enlargement of small town water system ..... Aug 72
Everett's water supply ..... May 81
Floating water treatment ..... May 90
Independent water system ..... Nov 48
Long-range planning for water service ..... July 65
Managing Great Britain's water ..... Dec 38
New national strategy ..... Jan 56
Progress report on water quality ..... May 73
Reverse osmosis ..... Oct 74
Riverside's groundwater pumping system ..... May 100
Sinkhole furnishes emergency water ..... Jan 44
Southern Nevada water project ..... May 68
Supply and treatment of Saudi Arabia ..... May 84

Water Treatment
Activated carbon filtration ..... Nov 56
Floating water treatment ..... May 90
Iron removal ..... Oct 52
Liquid polymers ..... Oct 64
New Westinghouse plant ..... June 54
Supply and treatment of Saudi Arabia ..... May 84

Water Works
Automatic network analysis by microcomputer ..... Mar 65
Disposal and lime reclamation system ..... Sept 88
Gary-Hobart service center ..... Nov 54
Gearing for the future ..... Nov 65
Meter reading and costs studied ..... Jan 68
Muncie, Indiana's water program ..... June 74
New automated system handles bulk chemicals ..... July 48
Polyethylene pipeline conquers swamp ..... Mar 74
Sandalfoot Cove, Fla. expands major plant ..... Sept 119
South Dakota community welcomes facilities ..... July 60
Surge control ..... Feb 47
Tank of the year award ..... Dec 32
Two trolley hoists modernize plant ..... Feb 46

WPCF
Annual conference ..... Sept 81, Nov 35
8th annual ad award selections ..... Oct 59
Workshops ..... Apr 70
Indiana WPCA ..... Feb 51
Michigan WPCA ..... Aug 24

No heavy coaxial cable. No expensive equipment trucks. This is the lightest, most economical underground TV survey system on the market.

Now that the Federal Water Pollution Act of 1972 is in effect, you just about have to buy a good underground survey system.

But all the other systems on the market use a heavy, expensive multi-conductor coaxial cable. And need a tow cable besides. That means you usually need a special truck just to carry the cables around.

Not with this one. Our camera operates on a tough, lightweight single conductor armored cable that also works as the towline. Which gives us a real weight advantage. In fact the whole system, complete with camera, housing, monitor, cable, reel and controls, weighs less than 400 pounds. You can pack the whole thing in the trunk of a car and take it anywhere.

The basic package sells for less than $8000, compared to conventional TV survey systems, which sell for almost twice as much.

And you get a top-notch system for your money. Because it's made by the oldest, most reliable company in the industry. The camera delivers high quality 600 line pictures. It has a unique silicon target vidicon tube that always gives you sharp images, even under low light conditions.

And here's another bonus you get with our system. For just a small amount more, you can add our 3D still camera option. This is the unit that's been proven in worldwide use for years. And since the 3D and video systems are completely interchangeable, all you have to do is slide the video camera out of the housing and slide the 3D camera in. It's like getting two systems for about half the cost of one.

Any one of your employees can learn to use this system. And we throw in three days' training for free. So, when you're making up your budget for next year, you should stop and think how much money we can save you over the next year. And then write us for more information.

Underground Surveys Corporation
Department 103, 1899 N. Helm,
P.O. Box 6119, Fresno, Ca 93727

For information circle service card No. 23